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Advance Data

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Characteristics of Persons Dying From AIDS

Preliminary Data From the 1986 National Mortality Followback Survey

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Introduction

In the span of one decade, acquired immune deficiency syndrome (AIDS) has become a public health problem of global urgency. Since its identification in 1981, both the absolute number and rate of deaths from AIDS have increased steadily in the United States. For example, between 1983 and 1986, the estimated number of AIDS deaths based on death certificates received by the National Center for Health Statistics (NCHS) through the mortality vital registration system grew from 1,141 to 10,900, and the estimated AIDS death rate increased from 0.5 to 4.5 per 100,000 population (1). AIDS is one manifestation of infection from the human immunodeficiency virus (HIV). Estimates of numbers of persons in the United States who are infected with HIV range from 1.0 to 1.5 million persons (2).

This report presents data from the 1986 National Mortality Followback Survey (NMFS) on selected characteristics of persons with mention of AIDS (ICD-9 code 279.1) on the death certificate. See the technical notes for a discussion of the ICD-9 codes. The analysis focuses on three broad subject areas: social and demographic characteristics, health care access and utilization during the last year of life, and measures of disability prior to death.

The 1986 NMFS is a 1-percent stratified random national sample representative of adults aged 25 years or over who died in the United States during 1986. The 1986 NMFS is the fifth of the periodic followback surveys on decedents conducted by the National Center for Health Statistics. The four earlier surveys, all conducted in the 1960's, were less comprehensive than the 1986 survey (3–9).

The purpose of the mortality followback surveys is to collect information not typically available from death certificates, thus enabling analysts to explore in much greater detail the characteristics of decedents and the circumstances of their death. Data collected during the 1986 NMFS provide detailed information on a nationally representative sample of adult deaths and an opportunity to examine many characteristics of the decedents and their last year of life.

The 1986 NMFS consists of data for 18,733 decedents. Data on social, demographic, economic, and behavioral and health related characteristics of decedents were obtained from a mailed questionnaire or personal interview with the person identified as the informant on the death certificate. The overall response rate for the survey was 89 percent.

The NMFS population included 284 decedents for whom HIV infection was reported on the death certificate as either the underlying cause of death or as a condition contributing to death and 18,449 decedents for whom no HIV infection was reported. Information from the NMFS questionnaire was available for 245 of the HIV decedents and for 16,353 of the other decedents. When weighted to yield national estimates, these deaths represent 9,276 AIDS deaths and 1,977,593 other deaths. The nonresponse rate for NMFS decedents with HIV mentioned on the death certificate was approximately twice as high as that for decedents dying from other causes. Further description of the cause-of-death classification and weighting procedure used in the 1986

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NMFS can be found in the technical notes.

Only substantive responses to the questionnaire items were included in these tables—blank items, a reply of "don't know" or "N/A," and so forth were not included. In addition, items were not imputed for nonresponse. For these reasons, the total number of responses varies by questionnaire item and is reflected in the totals for the tables in this report. Therefore, the number of deaths in the tables vary because of the exclusion of "no answer" and "multiple answer" deaths from the totals shown.

Sociodemographic and economic characteristics

Table 1 presents information on the age, sex, and race of persons dying from AIDS and from all other causes. Males accounted for 8,556 (92 percent) of the AIDS deaths, with 4,916 (53 percent) occurring among men 25–39 years of age and 2,781 (29 percent) among men 40–54 years of age. Females accounted for only 720 (8 percent) of the AIDS deaths. Black persons accounted for 2,063 (22 percent) of the AIDS deaths, and races other than black for 7,212 deaths (78 percent). There were approximately equal proportions of males and females dying from all other causes of death, and the largest proportion of deaths were to those 55 years of age or more (table 1). Black persons accounted for 11 percent of all other deaths, and persons of races other than black accounted for 89 percent. Because of the small numbers of AIDS deaths in the 1986 NMFS, the remaining tables in this report present data with no sex, age, or race breakdowns.

Table 2 shows selected demographic characteristics of persons who died from AIDS or other causes. Over half (53 percent) of the AIDS decedents had some college education compared with 19 percent of other decedents. Fewer than one fourth (24 percent) of the AIDS decedents had less than a high school education compared with 52 percent of other decedents.

Even though most of the AIDS decedents were in the younger age groups, a population that is usually employed, only 34 percent of them were employed at the time of their death. In general, persons having AIDS had stopped working for health reasons.

For those who had been employed previously, information was obtained on their longest held occupation (table 2). Unlike those dying from other causes, more than half of the persons who died from AIDS were in managerial and professional specialty occupations (39 percent) and technical, sales, or administrative support occupations (21 percent). Over half of the AIDS decedents (59 percent) lived alone or with a nonrelative during the last year of life compared with one-fourth of other decedents (table 2). Over one-third (35 percent) of AIDS decedents lived with one relative or more compared with 63 percent of other decedents.

Although persons who died from AIDS generally were in "white collar" occupations, they were likely to have had low levels of family income—28 percent had 1985 incomes below $5,000 (table 3). About 36 percent of the AIDS decedents were in the

Table 1. Estimated number and percent distribution of decedents by age, according to sex, race, and cause of death: United States, 1986

Age, sex, and race	AIDS		All other causes	
	Estimated number	Percent distribution	Estimated number	Percent distribution
Both sexes				
All races:				
All ages	9,276	100	1,977,593	100
25–39 years	5,260	57	83,787	4
40–54 years	2,824	30	147,878	7
55 years and over	*1,192	*13	1,745,928	88
Black:				
All ages	2,063	100	225,940	100
25–39 years	1,354	66	20,623	9
40–54 years	*589	*29	29,994	13
55 years and over	*120	*6	175,323	78
All other:				
All ages	7,212	100	1,751,653	100
25–39 years	3,906	54	63,164	4
40–54 years	2,235	31	117,885	7
55 years and over	*1,072	*15	1,570,605	90
Male				
All races:				
All ages	8,556	100	1,021,192	100
25–39 years	4,910	57	58,798	6
40–54 years	2,781	33	92,455	9
55 years and over	*865	*10	869,939	85
Black:				
All ages	1,746	100	121,548	100
25–39 years	1,200	69	13,991	12
40–54 years	*547	*31	18,402	15
55 years and over	0	0	89,154	73
All other:				
All ages	6,810	100	899,644	100
25–39 years	3,711	54	44,807	5
40–54 years	2,235	33	74,053	8
55 years and over	*865	*13	780,785	87
Female				
All races:				
All ages	*720	*100	956,401	100
25–39 years	*349	*48	24,989	3
40–54 years	*43	*6	55,423	6
55 years and over	*327	*45	875,989	92
Black:				
All ages	*317	*100	104,392	100
25–39 years	*154	*49	6,632	6
40–54 years	*43	*14	11,592	11
55 years and over	*120	*38	86,169	83
All other:				
All ages	*402	*100	852,009	100
25–39 years	*196	*49	18,357	2
40–54 years	0	0	43,832	5
55 years and over	*207	*51	789,820	93

NOTE: Numbers may not add to totals because of rounding. Oregon not included in the 1986 NMFS.

Table 2. Estimated number and percent distribution of decedents by selected demographic characteristics, according to cause of death: United States, 1986

Selected characteristics	AIDS		All other causes	
	Estimated number	Percent distribution	Estimated number	Percent distribution
Education				
Total	8,642	100	1,826,533	100
Less than high school	2,061	24	953,462	52
High school	1,992	23	525,382	29
1–3 years of college	1,770	20	194,231	11
4 years of college or more	2,819	33	153,459	8
Longest held occupation				
Total	8,083	100	1,662,707	100
Managerial or professional	3,164	39	260,688	16
Technical, sales, or administrative support	1,703	21	391,850	24
Service	*1,019	*13	234,177	14
Precision, craft, or repair	*753	*9	237,605	14
Operators or laborers	*1,032	*13	361,627	23
Farming, forestry, or fishing	*203	*3	130,935	8
Armed Forces	*210	*3	25,825	2
Living arrangement				
Total	8,637	100	1,892,794	100
Lived in institution	*495	*6	253,166	13
Lived alone or with nonrelative	5,104	59	456,114	24
Lived with 1 relative	*997	*11	753,040	40
Lived with 2 relatives or more	2,042	24	430,474	23

NOTE: Numbers may not add to totals because of rounding. Oregon not included in the 1986 NMFS.

Table 3. Estimated number and percent distribution of decedents by family income and assets, according to cause of death: United States, 1986

Family income and assets	AIDS		All other causes	
	Estimated number	Percent distribution	Estimated number	Percent distribution
Family income				
All incomes	6,552	100	1,554,853	100
Less than $5,000	1,813	28	335,622	22
$5,000–$10,999	*982	*15	459,604	30
$11,000–$18,999	*1,365	*21	330,086	21
$19,000 or more	2,371	36	429,342	28
Assets at death				
All assets	8,019	100	1,616,727	100
None	3,053	38	316,648	20
$1–$4,999	2,226	28	312,330	19
$5,000–$24,999	*888	*11	261,922	16
$25,000 or more	*1,852	*23	725,827	45

NOTE: Numbers may not add to totals because of rounding. Oregon not included in the 1986 NMFS.

highest income category of $19,000 or more. In addition, the AIDS decedents tended to have few assets at death. Thirty-eight percent of AIDS decedents had no assets compared with 20 percent of other decedents, and 28 percent of AIDS decedents had total assets of between $1 and $5,000 compared with 19 percent of other decedents. Assets included home, cash, stocks, bonds, cars, jewelry, business interests, and so forth. Because only a minority of AIDS decedents had lived with relatives in the year before their death, family income reported in the 1986 NMFS in most cases reflected only the income of the decedent. Often, the AIDS decedents, who tended to be young, were unemployed at the time of death. These factors may account, in part, for their lower income and assets.

Health care and costs

Selected measures of health care utilization for decedents are shown in table 4. Utilization of various health care services in the last year of life indicates that AIDS decedents tended to be sick for a substantial part of the year prior to death.

Persons who died from AIDS made frequent visits to a physician during the last year of life. Over one-third (37 percent) had 25 physician visits or more during the last year of life compared with 18 percent of other decedents. About 5 percent of the persons dying from AIDS had no physician visits during this time compared with 13 percent of persons dying from other causes. Larger proportions of persons who died from AIDS had one or more visits to a psychiatrist or other mental health professional during their last year of life (19 percent) than did persons who died from other causes (5 percent).

Of the estimated 9,276 AIDS decedents in the NMFS, 8,010 were reported to have been overnight patients in a hospital in the last year of life. Almost half (49 percent) of the AIDS decedents who were overnight patients spent 1 month or longer in a hospital compared with 29 percent of all other decedents. About 17 percent of the AIDS decedents received home hospice care during the last year of life compared with 9 percent of other decedents. During the 1986 NMFS, questions were also asked about residence in a nursing home during the last year of life, but the number of AIDS decedents residing in a nursing home was too low to yield reliable estimates.

The health care costs for almost one-half (45 percent) of the AIDS decedents and one-fourth of other decedents were primarily paid by private insurance or HMO's (table 5). (Another NCHS survey also reported substantial use of private insurance for payment of medical expenses among persons with AIDS (10). Approximately 22 percent of the AIDS decedents, compared with 9 percent of other decedents, had Medicaid as their

Table 4. Estimated number and percent distribution of decedents by selected health care utilization measures, according to cause of death: United States, 1986

Health care utilization measures	AIDS		All other causes	
	Estimated number	Percent distribution	Estimated number	Percent distribution
Physician visits				
Total	7,652	100	1,825,128	100
No visits	*357	*5	239,911	13
1–9 visits	2,705	35	760,123	42
10–24 visits	1,731	23	502,195	28
25 visits or more	2,859	37	322,900	18
Mental health visits				
Total	8,229	100	1,920,664	100
No visits	6,671	81	1,828,544	95
1 visit or more	1,558	19	92,120	5
Nights in hospital				
Total	8,010	100	1,401,800	100
1–14 nights	1,843	23	594,466	42
15–30 nights	2,284	29	406,921	29
31 nights or more	3,883	48	400,412	29
Home hospice care				
Total	8,483	100	1,905,032	100
Yes	1,414	17	169,508	9
No	7,069	83	1,735,524	91

NOTE: Numbers may not add to totals because of rounding. Oregon not included in 1986 NMFS.

Table 5. Estimated number and percent distribution of decedents by primary source of payment for health care, according to cause of death: United States, 1986

Primary payment source	AIDS		All other causes	
	Estimated number	Percent distribution	Estimated number	Percent distribution
All sources	7,744	100	1,595,957	100
Self or family	*523	*7	210,153	13
Medicare	*914	*12	758,348	48
Medicaid	1,688	22	143,631	9
HMO or private insurance	3,450	45	345,269	22
Other	*1,170	*15	138,556	9

NOTE: Numbers may not add to totals because of rounding. Oregon not included in the 1986 NMFS. HMO is health maintenance organization.

Table 6. Estimated number and percent distribution of decedents by own money spent for health care, according to cause of death: United States, 1986

Money spent for health care	AIDS		All other causes	
	Estimated number	Percent distribution	Estimated number	Percent distribution
All amounts	6,983	100	1,606,817	100
Less than $200	2,718	39	438,249	27
$200–$1,999	1,867	27	625,626	39
$2,000 or more	2,399	34	542,942	34

NOTE: Numbers may not add to totals because of rounding. Oregon not included in the 1986 NMFS.

primary payment source. Thirty-nine percent of the AIDS decedents spent less than $200 for their health care, and almost two-thirds spent less than $2,000 of personal money for such care (table 6).

Disability measures

Selected health status characteristics for decedents were also collected during the 1986 NMFS; these characteristics indicate that persons dying from AIDS were likely to suffer from certain disabilities. Table 7 shows how many persons who died from AIDS or other causes were reported to be disoriented prior to death. Twenty-six percent of the persons dying from AIDS and 13 percent of those dying from other causes were reported as having trouble recognizing family or friends during the last hours or days before death. About 18 percent of AIDS decedents and 11 percent of other decedents were reported to have had trouble remembering the current year in the last hours or days before death. Approximately 26 percent of AIDS decedents and 15 percent of other decedents had difficulty understanding their whereabouts.

A large proportion of decedents were also reported to have received help from others or to have used special equipment in daily activities, such as bathing, eating, walking, dressing, or using the toilet. There were few differences in these disabilities by cause of death. As table 8 shows, 60 percent of persons dying from AIDS were reported as having received assistance in bathing, and 57 percent received help with using the toilet. The least assistance received by AIDS decedents was with eating—40 percent were reported to have received such assistance.

Over half (52 percent) of the AIDS decedents were reported receiving help at home during the last year of life with daily activities and 54 percent were reported receiving help at home during the last year with medical care, such as taking medicines, giving pills or injections, or changing bandages (table 9). Similar proportions of persons dying from other causes reported such help. Among those who received help, about 69 percent of the AIDS decedents, compared with 91 percent of other decedents, had a relative provide the care. Thirty-eight percent of the AIDS decedents, compared with 13 percent of the other decedents, received help from a neighbor or friend. About 38 percent of AIDS decedents were helped by visiting homemakers or visiting nurses, as were 32 percent of persons dying from other causes.

Table 7. Estimated number and percent distribution of decedents by frequency of disorientation during last year of life, according to cause of death and type of disorientation: United States, 1986

Frequency of disorientation	Difficulty recognizing family or friends		Difficulty remembering what year it was		Difficulty understanding whereabouts	
	Estimated number	Percent distribution	Estimated number	Percent distribution	Estimated number	Percent distribution
AIDS decedents						
All frequencies	8,440	100	8,448	100	8,592	100
All or most of the time	*248	*3	*285	*3	*248	*3
Some of the time	*577	*7	*1,095	*13	*1,646	*19
Last hours or days	2,161	26	1,490	18	2,210	26
Never or hardly ever	5,453	65	5,578	66	4,488	52
All other decedents						
All frequencies	1,928,289	100	1,919,868	100	1,923,535	100
All or most of the time	115,284	6	192,697	10	158,547	8
Some of the time	206,473	11	221,774	12	261,467	14
Last hours or days	242,883	13	214,902	11	287,592	15
Never or hardly ever	1,363,649	71	1,290,495	67	1,215,928	63

NOTE: Numbers may not add to totals because of rounding. Oregon not included in the 1986 NMFS.

Table 8. Estimated number and percent of decedents, by assistance received with activities of daily living and cause of death: United States, 1986

Activities of daily living	AIDS		All other causes	
	Estimated number	Percent	Estimated number	Percent
Bathing	5,241	60	1,089,918	56
Eating	3,647	40	680,035	35
Walking	4,118	47	986,410	51
Toilet	4,967	57	954,371	49
Dressing	4,375	50	959,818	50

NOTE: Oregon not included in the 1986 NMFS.

Table 9. Estimated number and percent of decedents by type and source of help received at home and cause of death: United States, 1986

Type and source of help received	AIDS		All other causes	
	Estimated number	Percent	Estimated number	Percent
Type of help				
Daily activities	4,353	52	742,345	46
Medical care	4,506	54	762,712	47
Source of help				
Relative	3,251	69	785,470	91
Neighbor or friends	1,797	38	111,998	13
Visiting nurse or homemaker	1,763	38	276,473	32
Other	*496	*11	102,053	12

NOTE: Oregon not included in the 1986 NMFS.

Summary

The 1986 NMFS data indicate that persons dying of AIDS tend to be young, have a high educational attainment, and have high-status occupations. However, although persons who died from AIDS generally were in "white collar" occupations, as a group they were also likely to have had very low levels of family income in 1985 and no assets at the time of death. Employment status at time of death, living arrangements, and age structure of the AIDS deaths appear to be associated with the level of assets and income for these decedents.

Despite their young age, persons dying from AIDS were likely to suffer certain disabilities and to be disoriented prior to their death. A large number of AIDS decedents were reported to have used special equipment in daily activities such as bathing, eating, walking, dressing, and using the toilet. Large proportions of AIDS decedents were also reported to have received help at home in taking medicines, receiving injections, or obtaining other nursing care. These patterns reflect the prolonged and severe debilitating nature of their illness.

Persons who died from AIDS frequently used physicians' services and spent substantial time in the hospital during the last year of life. A considerable proportion of AIDS decedents were reported to have consulted a psychiatrist or other mental health professional during the last year of life, and to have received home hospice care. The primary source of payment for most AIDS decedents was private insurance or a health maintenance organization. However, Medicaid was the primary source of payment for care among more than one-fifth of the decedents.

References

1. Chevarley FM, Dawson DA. AIDS knowledge and mortality differentials by age, sex, and race. Paper presented at the meeting of the Population Association of America, April, New Orleans. 1988.
2. Centers for Disease Control. Quarterly report to the domestic policy council on the prevalence and rate of spread of HIV and AIDS—United States. MMWR 37(36):551–9. 1988.

3. National Center for Health Statistics. Hospitalization in the last year of life. National Center for Health Statistics. Vital Health Stat 22(1). 1965.
4. National Center for Health Statistics. Episodes and duration of hospitalization in the last year of life: United States, 1961. National Center for Health Statistics. Vital Health Stat 22(2). 1966.
5. National Center for Health Statistics. Socioeconomic characteristics of deceased persons: United States, 1962–63. National Center for Health Statistics. Vital Health Stat 22(9). 1969.
6. National Center for Health Statistics. Health insurance coverage of adults who died in 1964 or 1965: United States. National Center for Health Statistics. Vital Health Stat 22(10). 1969.
7. National Center for Health Statistics. Expenses for hospital and institutional care during the last year of life for adults who died in 1964 or 1965: United States. National Center for Health Statistics. Vital Health Stat 22(11). 1971.
8. Enstrom JE, Godley FH. Cancer mortality among a representative sample of nonsmokers in the United States during 1966–68. J Natl Cancer Institute 65(5). 1980.
9. Korbrin FE, Hendershot, GE. Do family ties reduce mortality? Evidence from the United States, 1966–68. J Marriage Fam 39. 1977.
10. Graves EJ, Moien M. Hospitalization for AIDS, United States, 1984–85. Am J Public Health 77(6):729–30. 1987.
11. National Center for Health Statistics. Births, marriages, divorces, and deaths for January 1986. Monthly vital statistics report; vol 35 no 1. Hyattsville, Maryland: Public Health Service. 1986.
12. National Center for Health Statistics. Annual summary of births, marriages, divorces, and deaths: United States, 1987. Monthly vital statistics report; vol 36 no 13. Hyattsville, Maryland: National Center for Health Statistics. 1988.
13. McCarthy PJ. Replication: an approach to the analysis of data from complex surveys. National Center for Health Statistics. Vital Health Stat 2(14). 1966.
14. McCarthy PJ. Pseudoreplication: further evaluation and application of the balanced half-sample technique. National Center for Health Statistics. Vital Health Stat 2(31). 1969.

Technical notes

Sources of data and sample design

The NMFS sample was selected from the Current Mortality Sample (CMS). This is a systematic 10-percent sample of death certificates received each month in the 50 States, the District of Columbia, and the independent registration area of New York City (11). Oregon was not included in the 1986 NMFS because of respondent consent requirements. Thus, these data are representative of deaths in the United States excluding Oregon. Oregon accounts for 1.1 percent of all deaths in the United States: there is little variation in the percent by age among Oregon deaths.

Oversampling by race, age, and selected causes of death was done to permit the study of race differentials in mortality and the characteristics of persons who died at a younger age. All CMS death certificates for decedents with certain characteristics were included in the 1986 NMFS. These included all women in the CMS 25–54 years of age and all men 35–64 years of age who died from ischemic heart disease, all deaths from asthma, rare cancer deaths, and all deaths of American Indians, Aleuts, or Eskimos. In addition, deaths to persons under 55 years of age were oversampled 3.1 times, and deaths to black people were oversampled 2.9 times. Death certificates in the CMS that were eligible for the 1986 NMFS were sequentially assigned to 1 of 18 sampling strata. The strata formation was based on the decedent's age, sex, race, and cause of death.

For the 1986 NMFS, questionnaires were mailed by the U.S. Bureau of the Census to the next of kin or to the person listed on the death certificate as providing the personal information on the decedent's death certificate about 6 months after the death. A reminder letter was mailed 10 days after the first mailing, followed by a second mailing 1 month after the first mailing. Telephone or personal visits were made by Census interviewers to nonrespondents 1 month after the second mailing.

Eighty-two percent of all the respondents who completed the NMFS questionnaire were close relatives—either the spouses, parents, siblings, or adult children—of the decedents. However, approximately 22 percent of the respondents for AIDS decedents were nonrelatives, compared with 6 percent for non-AIDS decedents. The total response rate was 89 percent, yielding 16,598 completed questionnaires.

For 1986, acquired immunodeficiency syndrome (AIDS) and human immunodeficiency virus (HIV) infection, when reported on the death certificate, were assigned to the category "deficiency of cell-mediated immunity" (code 279.1), as were other diseases classifiable as deficiency of cell-mediated immunity (12). Because the rules for selecting the underlying cause of death for 1986 give preference to other categories (for example, pneumocystosis), deaths with HIV infection used in this study were those for which deficiency of cell-mediated immunity was classified as either an underlying or a nonunderlying cause of death.

Information on age, race, sex, underlying and multiple cause-of-death data for each decedent was obtained from final data on the Multiple Cause-of-Death Statistical File compiled by NCHS. Records from the 1986 multiple cause-of-death file were matched to the data from the NMFS informant questionnaire for each decedent in the survey. The overall match rate was 99.9 percent.

Comparisons of number of deaths from the vital statistics registration system and the 1986 NMFS estimates

suggest that the counts of deaths are similar. For example, the NMFS-weighted data for 180 deaths to males 25–54 years of age yields 8,128 estimated deaths with mention of code 279.1 on the certificate, compared with 8,799 for the final vital statistics system file. Although the final weights applied to the NMFS adjust for differential sampling by race, sex, and age, no adjustment was made for cause of death. Hence, NMFS estimates of deaths by cause will not necessarily equal counts obtained from the vital statistics file.

Estimation procedures

Probability sampling allows the NMFS data to be weighted to produce national estimates for the United States except for Oregon. It also allows approximation of the sampling error.

The NMFS sampling weights are prepared by a poststratified ratio estimation procedure. The sampling weight for each sample decedent is based on a product of the following three component weights.

(1) Probability of selection. The basic weight for each sample decedent is the reciprocal of its probability of sample selection.

(2) Adjustment for nonresponse. In an attempt to reduce nonresponse bias, the NMFS sampling weights are adjusted for nonresponse. This adjustment was implemented within subsets of the sampling strata and was the reciprocal of the response rate within the subset. This adjustment reduces nonresponse bias to the extent that data for a nonrespondent is similar to data for respondents in these adjustment classes. No adjustment was made for the exclusion of Oregon from the survey.

(3) Poststratification by age, sex, and race. Within 28 poststrata defined by decedent age, sex, and race (see table I), the NMFS estimates were ratio adjusted to counts for the number of deaths reported to the National Vital Registration System for the United States excluding Oregon. This adjustment makes the sample more representative of the target population by age, sex, and race.

Table I. Parameters used to approximate the relative standard errors for estimates based on the 1986 National Mortality Followback Survey, by domain of study

Domain of study	Parameters	
	A	*B*
All decedents	−.000088	173.472799
Decedents 25–34 years of age	−.000725	40.250787
Decedents 35–54 years of age	−.000306	57.187500
Decedents 55–69 years of age	−.000325	189.139047
Decedents 70–84 years of age	−.000219	200.749692
Decedents 85 years of age and over	−.000430	181.208646
All black decedents	−.000250	57.315899
Black decedents 25–34 years of age	−.002721	36.923295
Black decedents 35–54 years of age	−.001278	48.883512
Black decedents 55–69 years of age	−.000863	64.860422
Black decedents 70–84 years of age	−.000688	59.820841
Black decedents 85 years of age and over	−.001911	54.630073
All other decedents	−.000106	184.663690
Other decedents 25–34 years of age	−.000948	39.640859
Other decedents 35–54 years of age	−.000419	62.024668
Other decedents 55–69 years of age	−.000411	214.015461
Other decedents 70–84 years of age	−.000253	211.433987
Other decedents 85 years of age and over	−.000484	190.261795

Sampling errors and rounding of percents

Because the statistics presented in this report are based on a sample, they may differ from figures that would have been obtained if a complete census of all death certificates for decedents aged 25 years or over had been taken, using the same questionnaire, instructions, and procedures. The standard error of an estimate is primarily a measure of the variability that occurs by chance because only a sample of the population, rather than the total population, is surveyed. The standard error also reflects part of the measurement error, but it does not measure any systematic biases in the data. The chances are about 95 out of 100 that an estimate from the sample differs from the value that would be obtained from a complete census by less than twice the standard error.

Preliminary estimates of standard errors for the percents of the estimated number of decedents are presented in table I. The parameters shown in table I were estimated by a balanced-repeated-replication procedure using 20 replicate half samples. This method estimates the standard errors for survey estimates through observation of variability of estimates based on replicate half samples of the total sample. A description of the development and evaluation of the replication technique for error estimation has been published (13,14).

Standard error applications

Standard error for aggregate estimates—The approximate standard error of an estimated number of decedents with a particular characteristic, x, is calculated by

$$\mathrm{RSE}(x) = \sqrt{A + (B/x)}$$

and

$$\mathrm{SE}(x) = x \cdot \mathrm{RSE}(x)$$

where x = estimated number of decedents

A,B = parameters from table I

$\mathrm{RSE}(x)$ = relative standard error of x, and

$\mathrm{SE}(x)$ = standard error of x.

Rounding of numbers and percents

Numbers and percents within the tables and text were rounded to the nearest whole number or tenth of a percent. Therefore, the estimates may not add to the totals. In addition, the total estimated number of decedents

varies from one table to another because of the exclusion of decedents with "no answer" responses.

NOTE: Nine other Federal agencies signed interagency agreements with NCHS to co-sponsor the 1986 NMFS. These agencies are the National Heart, Lung, and Blood Institute; the National Institute of Child Health and Human Development; the National Cancer Institute; the National Institute of Aging; the National Institute of Mental Health; the Health Care Financing Administration; the U.S. Department of Veterans Affairs; the Indian Health Service; and the Office of the Secretary for Planning and Evaluation in the Department of Health and Human Services. Special thanks go to Jeffrey Maurer, Richard Klein, and other reviewers for their helpful comments on this report, and to Charles Adams, Tracy Lloyd, Arlene Siller, and George Wolf for programming assistance.

Symbols

- - -	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Estimates based on fewer than 30 sample deaths; figure does not meet standards of reliability or precision
#	Figure suppressed to comply with confidentiality requirements

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